Understanding patent claims

(f) Drug for the treatment of cancer



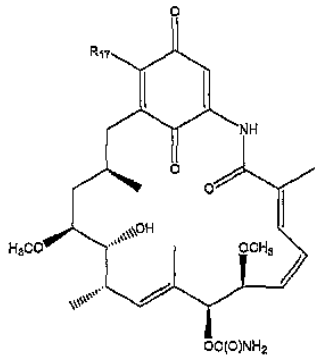
Treatment of cancer

Explanation of terms

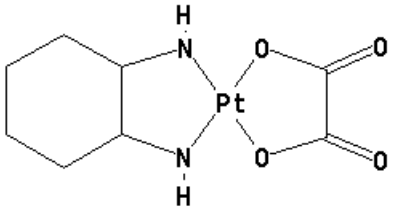
- **Heat shock protein 90 (HSP 90)**
  Belongs to a class of proteins that protect cells when stressed by elevated temperatures; assists in tumour repression.

- **Heat shock protein 90 inhibitor (HSP 90 inhibitor)**
  Compounds which block the functioning of HSP 90.
  Examples: geldanamycin or 17-alkylamino-17-desmethoxygeldanamycin (17-AAG).

- **Platinum coordination complexes**
  Platinum complexed with ligands. These compounds are used as chemotherapeutics.
  Examples: cisplatin, carboplatin, oxaliplatin.



17-AAG, R_{17} = alkylamino



Oxaliplatin

The invention

An improved way of treating people suffering from breast cancer by injecting a platinum coordination complex and optionally also an HSP 90 inhibitor.
The invention shows improved results by combining the two compounds.
The specific combination of oxaliplatin and 17-AAG has a synergistic effect.

How can you protect it from imitation?

- "An improved way" → Compared with what? (term not clear)
- "Way of treating people" → Method of treatment of the human or animal body by therapy = excluded from patentability
- "A platinum coordination complex " → Not a "method of treatment"; has a technical function → possible patent

How to patent this invention: claim it!

~~Patent Claim: "A platinum coordination complex"~~

Claiming a platinum coordination complex in general means trying to get very broad protection. You already know that such complexes have been described before.

~~Patent Claim: "A platinum coordination complex for use in the treatment of suffering people."~~

This wording also does not describe what you invented.

Patent Claim: "A platinum coordination complex for use in the treatment of breast cancer."

A prior art search will show whether the invention
– as claimed – is actually **new**.

Result of the prior art search

The prior art search found a journal article that discloses the invention.

Cancer Treatment Reports 67(3) 235-238, 1983

"... 2 [patients] with adrenocarcinomas in the breast ... were treated with cisplatin at a dose of 60 mg/m2 ..."

A platinum coordination complex (i.e. cisplatin) for use in the treatment of cancer is already known from this journal article!

Comparison of the two inventions

The invention as claimed	Cancer Treatment Reports
"A platinum coordination complex for use in the treatment of breast cancer."	"... 2 [patients] with adrenocarcinomas in the breast ... were treated with cisplatin at a dose of 60 mg/m^2 ..."

Not new

"A combination of a platinum coordination complex and an HSP 90 inhibitor for use ..."

- New
- Inventive step
  (the combined use shows improved effects)

Claim to protect the invention

Claim to be filed:

"A combination of a platinum coordination complex and an HSP 90 inhibitor for use in the treatment of breast cancer."

Use of dependent claims to improve protection

The patent should include both **broad** and **specific** claims.

Broad:
An independent claim (i.e. a claim stating the essential features of the invention) helps prevent the patent from being circumvented.

Specific:
Dependent claims refer to an independent claim and additionally define preferred embodiments of the invention.



Application filed with the European Patent Office (EPO)

CLAIM 1:
"A combination of a platinum coordination complex and an HSP 90 inhibitor for use in the treatment of breast cancer."

Claim 2: "A combination according to claim 1, characterised in that the HSP 90 inhibitor is 17-AAG."

Claim 3: "A combination according to claim 1, characterised in that the platinum coordination complex is oxaliplatin."

Claim 4: "A combination according to claim 2, characterised in that the platinum coordination complex is oxaliplatin."

The patent office will perform its own prior art search and then consider whether the invention AS CLAIMED is new and non-obvious.

Additional prior art found by the EPO

"Methods for enhancing the efficacy of cytotoxic agents through the use of HSP90 inhibitors"



(12)特許協力条約に基づいて公開された国際出願

(19) 世界知的所有権機関
国際事務局

(43) 国際公開日
2002 年2 月28 日 (28.02.2002)

PCT

(10) 国際公開番号
WO 02/15925 A1

"Combination of HSP 90 inhibitor ... with anticancer agents like carboplatin or cisplatin ... to inhibit ... growth of breast cancer cells."

The opinion of the EPO

Applicant's claim:
"A combination of a platinum coordination complex and an HSP 90 inhibitor for use in the treatment of breast cancer."

A platinum coordination complex (e.g. cisplatin) and an HSP 90 inhibitor were used in WO 02/15925 to treat breast cancer.

The invention according to claim 1 is already shown and claimed in WO 02/15925.

EPO response:
Please amend your claims if you want your invention patented!

Further analysis

- Check the material revealed in the prior art searches:
  - Does the invention have any features NOT disclosed in the prior art?
  - What are the advantages of the invention compared with the prior art?

How can the claims be amended to reflect the invention in a way that it is new (considering all the prior art)?

- Did the EPO interpret any important features of the invention differently to the inventor?

Applicant's reply: amendments to the application, explanation of the relationship between the invention and the prior art

Comparison of the invention with the prior art

	Cancer Treatment Reports	WO 02/15925
Technical features of the invention		
Claim 1: Combination of HSP 90 inhibitor and Pt coordination complex	No	✓
Claim 2: Features of Claim 1 + HSP90 inhibitor = 17-AAG	No	No
Claim 3: Features of Claim 1 + Pt coordination complex = oxaliplatin	No	No
Claim 4: Features of Claims 1 + 2 + Pt coordination complex = oxaliplatin	No	No
Advantages/technical result		
Improved effect (additive)	No	✓
Synergism (more than additive)	No	No

Result of the analysis

Although the individual elements of the invention are known, the **combination** of specific compounds **is not** and it produces a **new, unique benefit**. But you have to take into account that:

Claim 2 refers to the use of **17-AAG**. To use this specific HSP 90 inhibitor is considered to be trivial, because WO 02/15925 recommends using **any** HSP 90 inhibitor in combination with an anticancer agent.

Claim 3 teaches the use of **oxaliplatin**. Again, since WO 02/15925 hints at the use of **any** anticancer drug, the use of oxaliplatin is also considered to be obvious.

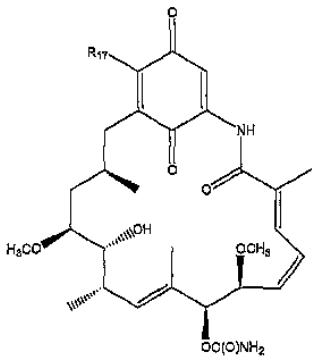
Claim 4 describes the use of the combination of **oxaliplatin** and **17-AAG**. It is shown in the patent application that the combination produces a synergistic (= more than additive) effect. This is not disclosed in WO 02/15925.

Result of the analysis

If one compound is simply replaced by another without showing any unexpected or surprising effect, such a replacement is frequently considered to represent routine for an expert.

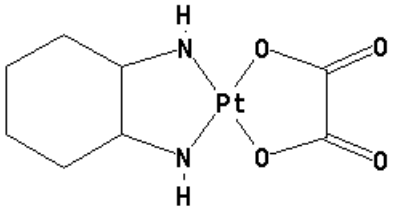
If an unexpected or surprising effect can be shown, then the invention is often considered to be inventive (i.e. the invention is not obvious for an expert working in the technical field).

The use of **17-AAG** and **oxaliplatin**, which leads to an unexpected synergistic combination, is therefore inventive.



R17 = alkylamino

+



=

Invention
(new + inventive)

The original description filed with the EPO supports the amendments to the claims

The present invention provides a method for treating cancer. The method involves the administration of an HSP90 inhibitor and a platinum coordination complex, where the combined administration provides a synergistic effect.

The HSP90 inhibitor for this aspect is typically 17-AAG, while the platinum coordination complex is oxaliplatin.

17-AAG combination in SKSBr-3 cells [0093] The following table provides CI values for combinations of 17-AAG and the platinum complexes oxaliplatin and cisplatin in an SKBr-3 cell assay ...

Supports inventive step: different technical result

Different to "Cancer Treatment ..."

Different to patent WO02/...

The patent is finally granted

Response from EPO: granted!

Claim 1 as granted reads:

"Medicament comprising 17-Alkylamino-17-desmethoxygeldanamycin (17-AAG) and oxaliplatin for use in the treatment of breast cancer in a patient."